UNITED STATES PATENT APPLICATION

FOR:

REMOVABLE INDOOR SUPPORTING STRUCTURE

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BACKGROUND OF THE INVENTION

Apartment dwellers are generally prohibited from mounting household articles, such as pictures and mirrors, to the walls of the leased or rented premises because of the damage to the wall surfaces caused by the nails and screws used to mount the articles. Even if the renters are permitted to mount articles to the walls of the leased premises, they are generally liable for the damages and costs of repair to the wall surfaces upon termination of the lease of the premises. Renters of office space also encounter similar difficulties. Even individuals who own the property in which they reside or work may still wish to avoid permanently damaging wall surfaces (including old plaster or stucco surfaces) caused by mounting mirrors and pictures directly on the walls. Similar difficulties and considerations are encountered by students living in dorms, art galleries, displays at trade and craft shows, and other locations which are occupied only on a temporary basis.

It is the primary object of the present invention to provide means for mounting pictures, mirrors, charts, maps, and other articles commonly mounted to the walls of offices and residences without causing any permanent damage to the wall surfaces. This object is achieved by removably mounting a relatively thin supporting beam to directly abut against the surface of a wall, to permit articles to be mounted to the beam and not directly to the wall surface, thereby avoiding any damage to the wall.

It is a further object of the present invention to provide means for temporarily dividing a space or room in offices, residences, and other locations, without causing any permanent damage to ceiling, floor and wall surfaces.

United States Patent Nos. 2,855,037; 2,903,227; 3,771,466; 3,828,937; 3,897,668, 4,561,617; 4,908,982; 5,083,729; 6,042,066; and 6,443,319, each illustrate known systems having supporting elements for supporting different structures for objects. These systems are exemplified by U.S. Patent Nos. 2,903,227 and 5,083,729, each of which disclose a vertical supporting pole having either bracket elements extending from the pole (U.S. Patent No. 5,083,729), or pre-drilled holes for receiving additional supporting elements such as supporting rods (U.S. Patent No. 2,903,227). Each of these supporting systems requires the provision of supporting elements in addition to the vertical supporting pole, thereby increasing the cost and complexity of producing the respective supporting systems. Moreover, the brackets of U.S. Patent No. 5, 083,729 and the pre-drilled holes of U.S. Patent No. 2,903,227 restrict the positions on the pole at which objects and articles can be mounted.

As will be discussed herein, the storage system of the present invention overcomes the disadvantages of the known systems. Other objects and advantages of the improved storage system in accordance with the present invention will be apparent from the following description in conjunction with the drawings.

SUMMARY OF THE INVENTION

A supporting system for mounting articles proximate to the walls in the interior of a dwelling or office includes a relatively thin, generally rectangular configured beam adapted to be removably mounted in a vertical orientation between a ceiling and a floor with one side of the beam contiguously abutting against the surface of a wall. At least one of the upper or lower ends of the beam includes mounting means, such as a spring tension element, to assure that the beam will be maintained in its vertical orientation between the floor and ceiling surfaces as a result of frictional engagement. Preferably the spring tensioning means is provided at the upper end of the beam for engaging the ceiling, while a supporting foot is provided at the lower end of the beam for engaging the floor. Other known means for adjusting the vertical length of the beam to assure that it is retained by frictional engagement between the floor and ceiling surfaces can be employed in the present invention. For example, instead of providing one end of the beam with spring tensioning means, a screw threaded telescoping element is extendable from one end of the beam to adjust the vertical height of the beam for securely (but removably) retaining the beam between the floor and ceiling surfaces by frictional engagement. Since the types of conventional rooms are somewhat standard, the degree of adjustment necessary to match the vertical extent of the beam to the distance between the floor and ceiling surfaces will be relatively minimal.

In operation, the supporting beam is mounted in a vertical orientation between the floor and ceiling surfaces, and is moved into a position such that the inner surface of the beam directly abuts against the outer surface of a wall. The vertical length of the beam is adjusted so that the upper and lower ends of the beam are retained in position by frictional engagement with the ceiling and floor surfaces, respectively. Preferably, the beam is finished so that it aesthetically blends in with or matches the wall surface (e.g., the beam is stained or painted the same color as the wall). Common household or office articles, such as mirrors, pictures, maps, charts and the like, are mounted directly to the outer surface of the beam by nails, screws and other conventional mounting means. Since the beam is not directly mounted to the wall, ceiling or floor surfaces, and since the articles are mounted only to the beam and not directly to the wall surface, there is no permanent damage to the wall, the ceiling, or the floor as a result of mounting the articles directly to the beam and not to the wall surface. The articles can be mounted to the beam at any height desired by the user, and the beam can be removed without leaving any damage to the wall, ceiling or floor surfaces. Moreover, if desired, the beam can be relocated to different positions along the wall, or to a completely different wall within the dwelling or office location.

In further embodiments of the invention, a plurality of beams can be mounted in close proximity to each other along a common wall to provide additional surface area for mounting

articles to the beam. Horizontal elements bridging the adjacent vertical beams can be provided for additional surface area for mounting other articles between the two vertical beams.

In all embodiments of the invention, no articles are mounted directly to the wall surfaces, and there is no restriction of the position at which the article can be mounted on the supporting structure.

In a further embodiment of the invention, a beam of the aforementioned type is used to support one or more panels for selectively dividing a space, as for example a room in a residence or office, without causing damage to floor, ceiling or wall surfaces.

BRIEF DESCRIPTION OF THE DRAWINGS

FIGURE 1 illustrates a front elevational view of a first embodiment of a supporting system in accordance with the present invention;

FIGURE 2 illustrates a front elevational view of a second embodiment of a supporting system in accordance with the present invention;

FIGURE 3 illustrates a front elevational view of a third embodiment of a supporting system in accordance with the present invention; and

FIGURE 4 illustrates a further embodiment of the invention in which the supporting system is employed to support dividers for separating a larger space into different smaller spaces.

DESCRIPTION OF THE BEST MODES FOR CARRYING OUT THE INVENTION

FIGURE 1 illustrates a preferred embodiment of a supporting system in accordance with the present invention. A beam is designated by reference numeral 2. Preferably, the beam 2 is generally rectangular or square in cross-section. The beam is preferably formed from wood or a wood treated material to permit nails, screws and other conventional mounting means to beam be directly received in the beam. The beam is vertically oriented between an upper ceiling surface designated by reference numeral 4, and a lower floor surface designated by reference numeral 6. A foot element, designated by reference numeral 8, is attached to the lower end of the beam 2 to provide enhanced stability and balance to the beam when it is oriented in its vertical position. A spring loaded support element, designated by reference numeral 10, extends from the top end of the beam and abuts directly against the ceiling 4. The beam 2 is held in its vertical orientation as shown in FIGURE 1, between the ceiling and the floor surfaces, as a result of frictional engagement between the bottom end of the beam (the foot element 8) and the floor 6, and the top end of the beam (the spring tension element 10) and the ceiling 4.

The beam 2, in its vertical orientation, is positioned such that a rear surface of the beam (not shown), contiguously abuts

against the front surface of a wall, generally designated by reference numeral 12. In this position, the front surface of the beam, designated by reference numeral 14, faces outwardly from the wall 12.

The spring tension element 10, extending from the top end of the beam 2, is provided to selectively adjust the length of the beam 2 so that it corresponds to the distance between the floor and the ceiling to assure that the beam snugly fits and is securely maintained between the ceiling and floor surfaces. The beam 2 is retained between the floor and ceiling and abuts against the front surface of the wall 12, exclusively by frictional engagement. Therefore, the beam 2, in its operative position as illustrated by FIGURE 1, is not physically mounted to either the ceiling, the floor, or the wall surfaces. Accordingly, no damage occurs to any of these surfaces, and the beam, at the selection of the user, can be readily removed from its operative position simply by reversing the steps taken to initially mount the beam. Similarly, the beam can easily be relocated to different positions along the same or different walls in the same or different building structure.

Since the ceiling height of most rooms in most building structures are standard, the height adjustment provided by the spring tension means 10 will be relatively minimal in nature. Therefore, the size of the spring tension element and the distance which it extends from the top end of the beam 2, will be

relatively small. Moreover, although the preferred embodiment of the invention employs a spring tension element extending from the top end of the beam to provide height adjustment means, other conventional height adjustment means can also be used in the present system. For example, the spring tension element can be replaced by a telescoping element which, at the selection of the user, is extendable from either the top or bottom end of the beam to compensate for the difference between the distance between the ceiling and the floor and the vertical length of the beam 2, and to assure that the beam will be securely maintained in its vertical orientation by frictional engagement.

When the beam is mounted in its operative position between the ceiling and the floor and flush against the wall 12 as illustrated by Figure 1, the outer surface 14 of the beam provides surface area for mounting common household or office articles, such as pictures, mirrors, maps, charts and other objects which would otherwise be mounted directly to wall surfaces. However, since these articles are now mounted directly to the supporting beam 2 and not directly to the wall 12, there is no damage to the wall surface by nails, screws or other conventional mounting means. Moreover, articles can be mounted to the beam 2 at any height along the beam, as desired by the user.

Preferably, the thickness of the beam is relatively small (e.g., between 1/2 - 1 inch) so that the beam, when flush against the

wall surface 12, extends only minimally outwardly from the wall surface. (The beam must, of course, be thicker than the length of the nails or screws to be driven into the beam to mount articles thereon. However, since the beam is maintained in position by frictional engagement, its thickness will be significantly less than a free standing structure). In this manner, the beam tends to blend into the wall to provide an overall aesthetically pleasing appearance. This apperance can be enhanced by painting or finishing the beam to be of the same color or texture as the wall surface to minimize or eliminate any obtrusive defect.

Similarly, the width of the beam 2 can be minimized (e.g., between 1/2 - 1 inch) for aesthetic purposes. It is only necessary that the outer surface area 14 of the beam 2 be sufficiently wide to receive a nail, screw or other conventional mounting means for directly mounting articles to the beam.

Although the support system illustrated by FIGURE 1 shows that the spring tension element extends from the top end of the beam 2, it is also possible to have the spring tension element extending downwardly from the bottom end of the beam 2, and not upwardly from the top end of the beam 2. Moreover, although the supporting system illustrated by FIGURE 1 discloses a supporting foot 8 extending from the bottom end of the beam 2, the supporting foot can be eliminated so that the bottom end of the beam 2 directly engages the top of the floor 6. Additionally, as noted above, the height adjustment means provided by the spring

tension element 10 can be replaced by other conventional height adjustment means, such as a telescoping element extendable from either the top or bottom end of the beam 2.

Turning now to FIGURE 2, this drawing illustrates a slightly modified embodiment of the support system in accordance with the present invention. The discussion of FIGURE 1 herein is equally applicable to the FIGURE 2 embodiment. The basic difference between the system illustrated by FIGURE 1 and that illustrated by FIGURE 2 is that in the FIGURE 2 embodiment, two adjacent beams 2 are retained flush against the front surface of the wall 12 by frictional engagement with the ceiling and floor surfaces. In this embodiment of the invention, the surface area 14 of the beams 2 to which articles can be mounted is doubled as compared to FIGURE 1. Larger articles, such as charts or maps, which require mounting at two different positions, are mountable to the two adjacent beams. Additionally, different articles can be mounted at the same height on the different respective beams in close proximity to each other. In the alternative, different articles can be mounted on the different beams at different elevations in close proximity to each other. Although FIGURE 2 illustrates two adjacent beams 2 mounted by frictional engagement to a common wall 12, it is equally within the scope of the invention to provide more than two adjacent beams 2 mounted in close proximity to each other flush against the same wall surface 12.

Turning now to FIGURE 3, this drawing illustrates a slight modification to the FIGURE 2 embodiment. In the FIGURE 3 embodiment, a bridging element designated by reference numeral 16 is connected to the adjacent inner surfaces of the two adjacent beams 2. Preferably, the bridging element 16 is oriented perpendicular to both of the vertically extending beams 2, is of the same thickness as each of the beams 2, and is formed from the same material as each of the beams 2. The color and finish of the bridging element 16 preferably matches that of the two beams 2 which, as noted above, blends in with the wall surface 12. The bridging element 16 provides two separate functions - it enchances the integrity of the supporting structure provided by the beams 2, and it also provides additional surface area for mounting articles between the two adjacent beams 2. Other than the addition of the bridging element 16 to the FIGURE 3 embodiment of the invention, the discussion herein of the structure and function of the FIGURES 1 and 2 embodiments of the invention are equally applicable to the FIGURE 3 embodiment of the invention.

In each of the embodiments of the invention discussed herein, a removably mountable supporting structure is held flush against a wall surface by frictional engagement with ceiling and floor surfaces. The supporting structure provides surface area sufficient to mount articles, such as pictures, mirrors, and the like, directly to the removable supporting structure by nails and screws which penetrate only the supporting structure, and not the

wall surface. Since the supporting structure is not permanently mounted to either the ceiling or floor surfaces, and since the supported articles are not mounted directly to the wall surface, the articles are mounted without any damage to the ceiling, the floor or the wall surfaces. The articles mounted to the supporting structure can, at the selection of the user, be removed from the supporting structure. The overall supporting structure can thereafter be removed from the wall surface either permanently, or relocated to a different position on the same wall or to a different wall, without damaging any wall surface.

FIGURE 4 illustrates a further embodiment of the supporting structure in accordance with the present invention. The same reference numerals are used in FIGURE 4 to designate elements corresponding to those illustrated in FIGURES 1 - 3. FIGURE 4 illustrates a beam 2, as illustrated by FIGURE 1, held in vertical orientation with respect to a ceiling 4 and a floor 6 by frictional engagement between the upper and lower ends of the beam and the ceiling and floor. As discussed with respect to FIGURES 1 - 3, a spring tension element 10 extends from the top end of the beam 2 and engages the ceiling 4, while a supporting foot 8 extends from the bottom end of the beam 2 and engages the floor 6. A plurality of panels generally designated by reference numeral 18 are mounted to the beam 2 by a plurality of hinges designated by the reference numeral 20. As illustrated by FIGURE 4, the height of the panels 18 is less than the height of the beam 2, but it is also within the scope of the invention to

provide panels 18 of a height substantially equal to that of the beam. As also illustrated by FIGURE 4, the different panels 18 are hingedly mounted to each other so that the panels are movable between an extended position and a foldable compact position. As will now be discussed, the panels, when in their extended position, can be used to divide a larger space into smaller spaces.

In operation, the beam 2 is mounted between the floor 6 and the ceiling 4, as described with respect to FIGURES 1 - 3. The beam is maintained in a vertical orientation relative to the floor and ceiling exclusively by frictional engagement, and thereby will not cause damage to the floor and ceiling surfaces during installation or removal. The panels 18 can be previously mounted to beam by hinges 20 so that the beam and the panels can be installed as a unit in the position illustrated by FIGURE 4. In the alternative, the beam 2 can first be mounted in its vertical orientation, and the panels 18 can be hingedly mounted to the beam after the beam has been installed. Once the beam and the panels 18 have been assembled and mounted in the position illustrated by FIGURE 4, the panels can be moved into their extended position to divide a larger space (e.g., a room in a residence or a dormitory) into two smaller spaces. The bottom ends of the panels 18 are supported by the floor 6, and thereby provide supplemental support to the beam 2 to maintain the beam and the attached panels in an upright vertical orientation. In this embodiment of the invention, although the beam 2 can be

mounted flush against the front surface of a wall 12, it is unnecessary to do so if less than the entire length of the room is to be divided by the panels. For example, the beam 2, if desired, can be mounted in the center of a room between the floor and the ceiling if only a portion of the room is to be divided by the panels 18. As also illustrated by FIGURE 4, more than a single beam with attached panels 18 can be mounted in the same area to subdivide a room. For example, a first beam and panel combination can be mounted at one end of the room, and a second beam and panel combination can be mounted at an opposed end of the room, and the remote ends of the opposed extended panels can meet (or be joined together) in the center of the room. In the alternative, the divider can be a free-standing structure in which one or more panels extend between two opposed vertical beams at different locations in the room, the opposed ends of the panel(s) being connected to the respective opposed beams.

In summary, the embodiment of the invention illustrated by FIGURE 4 provides means for readily and temporarily subdividing a room into one or more spaces without resulting in any damage to any wall, ceiling, or floor surfaces of the room to be divided.

Other modifications and advantages falling within the scope of the present invention will be apparent to those skilled in the art. Accordingly, the description of the preferred embodiments of the invention herein is intended to be illustrative only, and

not restrictive of the scope of the invention, that scope being defined by the following claims and all equivalents thereto.